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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,569	09/29/2003	Karthik Janakiraman	A6378C1/T45510	3855

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/674,569

Applicant(s)

JANAKIRAMAN ET AL.

Examiner

Rudy Zervigon

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/21/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

iDETAILED ACTION

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Metzner; Craig R. et al (US 6,454,860 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Metzner teaches a gas distribution face plate (240; Figure 4; column 7, lines 33-50) comprising: a face plate (240; Figure 4; column 7, lines 33-50) body having a thickness (distance 249; Figure 7) defining a number of inlet orifices (249; Figure 7; column 9, lines 53-64) having a width (247; Figure 7; column 9, lines 53-64) of between about 0.010” and 0.018” (column 9, line 38: “inlet diameter 247 of 0.028 inches ”) and a depth (283, 249; Figure 7; column 9, lines 53-64), at least one parameter selected from the number, the width (247; Figure 7; column 9, lines 53-64), and the depth (283, 249; Figure 7; column 9, lines 53-64) configured to create a uniform pressure drop of between about 0.8 and 1 Torr across edge and center regions of the face plate (240; Figure 4; column 7, lines 33-50) as gas is flowed through the inlet orifices (249; Figure 7; column 9, lines 53-64), whereby a thickness of material deposited at an edge of a wafer varies by

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3% or less from a thickness of material deposited at a center of the wafer, when the wafer is separated from the face plate (240; Figure 4; column 7, lines 33-50) by a gap of between about 75 and 450 mils, as claimed by claim 1. Applicant's claim limitations of "...configured to create a uniform pressure drop of between about 0.8 and 1 Torr across edge and center regions of the face plate (240; Figure 4; column 7, lines 33-50) as gas is flowed through the inlet orifices, whereby a thickness of material deposited at an edge of a wafer varies by 3% or less from a thickness of material deposited at a center of the wafer, when the wafer is separated from the face plate by a gap of between about 75 and 450 mils" are claim requirements of intended use. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Additionally, it is believed the prior art apparatus is capable of performing the intended use. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02). When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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4. Claims 1, and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toki, Masahiko et al. (JP 04154116 A). Toki Teaches a low pressure CVD apparatus (Figures 1,2) including a face plate body 21 (abstract, Figure 1) with a pressure drop across said face plate body 21 sufficient to provide “film thickness distribution is within 3%” (abstract).

Toki does not teach the wafer separation distance of 75 to 450 mills and the exact pressure drop of 0.8 and 1 Torr range across the face plate body 21. Toki further does not teach his face plate body 21 with the number of orifices (25,26; Figure 1) between 2000 and 17,500 orifices and where said orifices have widths between 0.010 and 0.018 inches as claimed by claims 2-5.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the dimensions and number of Toki's inlet orifices to optimize the claimed film thickness variation resulting from the uniform pressure gradient.

Motivation to optimize the dimensions and number of Toki's inlet orifices to optimize the claimed film thickness variation resulting from the uniform pressure gradient is for achieving film thickness uniformity as taught by Toki (abstract). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04). Further, it is well established that the duplication of parts is obvious (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

Response to Arguments

5. Applicant's arguments filed have been fully considered but they are not persuasive.

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6. In response to Applicant's position regarding the Metzner reference not showing certain claimed features, the Examiner believes the amended claim 1 limitation of "a width of between about 0.010" and 0.018" is explicitly taught by Metzner as discussed above. Specifically, Metzner states that his width (247; Figure 7; column 9, lines 53-64) of between about 0.010" and 0.018" is "about" in the range claimed. In this case "inlet diameter 247 of 0.028 inches" (column 9, line 38) has a difference with the claimed upper range of 0.028" – 0.018" of 0.01 inches which is described by Metzner with sufficient specificity.

7. In Applicant's latest reply, Applicant states "claims 1-5 stand rejected as anticipated, and not merely obvious, in view of the Metzner patent". In response, Applicant is directed again to the Examiner's April 2006 action that *does not* reject claims 1-5 under Metzner. The Examiner's April 2006 action that *does* reject claim 1 under Metzner. With regard to the Metzner reference, Applicant consistently cites lines in column 10, 11, and 12 of the patent, yet ignoring the Examiner's explicit citation in Metzner's column 9 where Applicant's claimed range is taught. See above.

8. With regard to the Toki reference, the Examiner notes that Toki's CVD apparatus (Figures 1,2) includes a face plate body 21 (abstract, Figure 1) described in the translation as "showerhead electrode 5, in which many small holes are formed at regular intervals" (translation page 3, "Prior Art") and states that the collective structure provides a result-effective variable of "film thickness distribution is within 3%" (abstract). Further, in the translation, Toki recognizes that more optimization is needed by not settling for subpar film thickness distribution variations: "the thickness distribution is still inadequate in that only a range of +5% can be reliably achieved" (page 4). The Toki reference, as translated, has apparatus components with the

following result: "so that the film thickness distribution of the thin film formed on the wafer surface is within 3% without compromising the film formation rate." (Translation, "Effect of the invention" page 10).

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

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can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.



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